

LIFE SUPPORT EQUIPMENT

FOR THE

U-2R

OSA PROGRAM

- I. Basic Need
- II. Specific Requirements, OSA
- III. Funding Requirements, OSA

Date (revised)

18 August 1967

USAF review(s) completed.

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I. BASIC NEED

A. Present U-2 Life Support System is Obsolete

- (1) Original pressure suit development was in late 1940's - early 1950's.
- (2) Maximum duration tolerated in U-2 flight with end of flight at maximum limit of pilot's fatigue tolerance -- pilot near collapse -

Ferry Flight: 12.75 hrs.

Operational Flight: 12.5 hrs.

Operational Flight: 4 hrs. with pressure suit inflated.

- (3) Replacement parts for repair, overhaul, and maintenance nearly non-existent.

No depot levels.

USAF surpluses depleted.

Contractors unable to tool-up economically -- costs would be prohibitive for small quantities required.

Especially critical for helmets.

B. U-2R Flight Envelope -- demands that pilots' capabilities be matched to the aircraft's capabilities, i.e.:

- (1) 13.6 hours maximum altitude cruise, 4,000 N.M.
- (2) 17.1 hours maximum range cruise, 7,000 N.M.
- (3) Present U-2 pressure suit will not allow pilot to match this performance.
- (4) Logical choice is full pressure suit, based on NASA's Project Mercury and Gemini experience -- Days or weeks spent in similar equipment.

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C. "Off-the-Shelf" and "Standard" Equipment

- (1) Off-the-shelf items do not exist in sufficient numbers to fit all pilots required.
- (2) Standard items will not satisfy requirements imposed by U-2R characteristics without modification.

D. S-1010 Pilot's Protective Assembly for U-2R Pilots

- (1) Assembly is a modification of a standard item, the SR-71 S-901 J Pilot's Protective Assembly.
- (2) Modifications of SR-71 Assembly are:
 - (a) Increased pilot comfort to insure adequate performance and minimize fatigue over durations involved.
 - (b) Elimination of features of assembly required only for Mach 3.2 flight.
 - (c) Basic SR-71 assembly hardware utilized -- no new development or AGE development required.

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II. SPECIFIC REQUIREMENTS, OSA

A. Flight Test Program: 28 Aug 1967 - 1 March 1968

(1) Pilot's Protective Assemblies (PPA's)

ADP test pilots. Interim use of modified OXCART suits at start of program. FY-67 funding for S-1010 suits for ADP pilots.

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(2) One S-1010 PPA for Project test pilot (obtained from FY-68 funding)

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(3) AGE, test equipment, tools, suit spares, AGE spares to support "interim" PPA's and S-1010 PPA's at Detachment G. Most items procured, some "borrowed".

(4) Technical training for life support personnel in full pressure suits, related AGE and test equipment.

(5) Tech data, drawings, specifications and manuals in support of new equipment.

(6) One additional Firewel Tech Rep and one David Clark Tech Rep at Detachment G.

B. U-2R Pilot Qualification Training: 1 Feb - 1 June 68

(1) 1.7 S-1010 PPA's per ATTACHED Pilot.

attached pilots for a total of PPA's required:

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(2) Additional spares, AGE and tech training at Detachment G.
Also, installation of AGE and test equipment in new
life support facility at Detachment G.

C. Initial Operational Capability: 1 June 1968

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- (1) Requires 2 complete PPA's for each [] pilots (Project)
with 1 PPA per remaining pilots (Staff).
- (2) Requires suit spares to support all PPA's and two FAK's.
- (3) Requires AGE, test equipment, and appropriate spares
for provisioning of Detachments G and two FAK's.
- (4) Requires fully trained life support personnel, including
tech reps, at Detachment G.

D. FY-68 Firewell

- (1) AGE, test equipment, and appropriate spare parts for
two FAK's will be required.
- (2) Spare parts for AGE and test equipment purchased in
FY-67 for Detachment G will be required.
- (3) Data, drawings, manuals, tech training and AGE in-
stallation (Det G) will be required.

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* Items 1-6 represent initial costs for life support system incurred in FY-67, 68 only.

Items 7-10 are continuing costs to support equipment procured in FY-67, 68. Line items are broken down into subitems in parentheses.

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